

CLAIMS:

- 5 *5/27/01*
1. A steerable catheter comprising:  
an elongated, flexible tubular catheter body having proximal and distal ends and a lumen extending therethrough;  
a tip section at the distal end of the catheter body, the tip section comprising a flexible plastic tubing having at least one off-axis lumen extending therethrough;  
10 a control handle at the proximal end of the catheter body;  
a puller wire extending through the off-axis lumen of the tip section and lumen of the catheter body, and having a proximal end anchored to the control handle and a distal end anchored to the tip section, whereby the puller wire is longitudinally moveable relative to the catheter body to cause deflection of the tip section in a plane in a first direction; and  
15 one or more stabilizing features extending longitudinally along at least a portion of the length of the tip section and positioned generally symmetrically about a diameter of the tip section corresponding to the plane in which the tip section is deflectable, the one or more stabilizing features comprising a material that has a higher modulus of elasticity than the plastic of the tip section.
- 20 2. A catheter according to claim 1, wherein the tip section is more flexible than the catheter body.
- 25 3. A catheter according to claim 1, wherein the one or more stabilizing features are generally rigidly in place relative to the tip section.
4. A catheter according to claim 1, wherein the tip section tubing comprises a core and an outer layer surrounding the core.
- 30 5. A catheter according to claim 4, wherein two stabilizing features are provided in the outer layer on opposite sides of the core.
6. A catheter according to claim 5, wherein each stabilizing feature comprises a metal rod.

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7. A catheter according to claim 6, wherein the metal rods are coextruded with the outer layer.

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8. A catheter according to claim 5, wherein each stabilizing feature comprises a plastic strip.

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9. A catheter according to claim 8, wherein the plastic strips are coextruded with the outer layer.

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10. A catheter according to claim 5, wherein the tip section further comprises a braided mesh between the outer layer and the core.

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11. A catheter according to claim 10, wherein the tip section further comprises an inner layer between the braided mesh and the core.

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12. A catheter according to claim 6, wherein the tip section further comprises a braided mesh between the outer layer and the core.

13. A catheter according to claim 4, wherein a single stabilizing feature is provided in the core.

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14. A catheter according to claim 4, wherein two stabilizing features are provided in the core.

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15. A catheter according to claim 1, having a second off-axis lumen in the tip section and further comprising a second puller wire extending through the second off-axis lumen, the second puller wire having a proximal end anchored to the control handle and a distal end anchored to the tip section, whereby the puller wire is longitudinally moveable relative to the catheter body to cause deflection of the tip section in the plane in a second direction opposite the first direction.

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16. A catheter according to claim 15, wherein the tip section is more flexible than the catheter body.

17. A catheter according to claim 15, wherein the one or more stabilizing features are generally rigidly in place relative to the tip section.

5 18. A catheter according to claim 15, wherein the tip section tubing comprises a core and an outer layer surrounding the core.

10 19. A catheter according to claim 18, wherein two stabilizing features are provided in the outer layer on opposite sides of the core.

20. A catheter according to claim 19, wherein each stabilizing feature comprises a metal rod.

15 21. A catheter according to claim 20, wherein the metal rods are coextruded with the outer layer.

22. A catheter according to claim 19, wherein each stabilizing feature comprises a plastic strip.

20 23. A catheter according to claim 22, wherein the plastic strips are coextruded with the outer layer.

25 24. A catheter according to claim 19, wherein the tip section further comprises a braided mesh between the outer layer and the core.

25. A catheter according to claim 24, wherein the tip section further comprises an inner layer between the braided mesh and the core.

30 26. A catheter according to claim 20, wherein the tip section further comprises a braided mesh between the outer layer and the core.